



New Mexico Plant Materials Center Los Lunas, New Mexico

2001 Progress Report Demonstration Planting

**El Pueblo Acequia, Pecos River
San Miguel County, New Mexico**



**Riverbank at the base of diversion dam near
El Pueblo, NM**



**Same location three months after planting
coyote willow poles (June 2001)**

Planting Conducted and Report Prepared by:

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July 2001

Demonstration Planting at El Pueblo Acequia

Pecos River, San Miguel County, New Mexico

Introduction

1,650 coyote willows and 60 black willows were to be planted on the West Bank of the Rio Pecos April 9–12, 2001 at the newly built Army Corps of Engineer's diversion dam near El Pueblo, New Mexico. This planting is mitigating for loss of wildlife habitat associated with this construction project. This planting will also provide an opportunity for a demonstration planting on using only vegetation to control erosion of newly contoured riverbank and to test the Plant Material Center's (PMC's) new technique to use an electric rotary hammer drill to install willows in very cobbled and gravelly soil.

The planting was delayed by two weeks so the dam could be completed. During the time of the delay, the willow pole cuttings began to grow roots (see Figure 1) where the cutting was in contact with water. As spring progressed, the air temperature increased which raised the temperature of the water in the tanks and accelerated the rooting process. This process is usually considered undesirable because some of the limited stored energy in the willow stem is utilized for root growth, and the new roots are often rubbed off during the planting process.

The site where the 60 black willows were to be planted was not ready by April 12. The contractors had not leveled or seeded the site with herbaceous cover, so it was not planted with the willows. The site was leveled and fenced, but there was no evidence of a seeding (see Figure 2). The PMC will plant black willow pole cuttings in February or March of 2002.

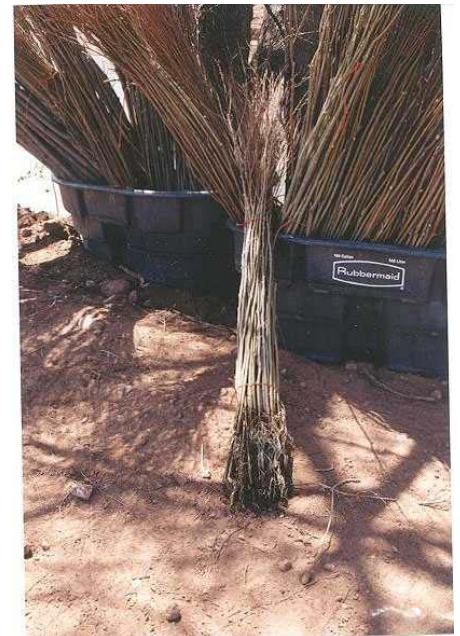


Figure 1: Cuttings growing in water tanks.



Figure 2: Planting location for black willow pole planting.

Methodology

The source of the coyote and black willow is the Middle Rio Grande Valley, NM at approximately 5000-ft. in elevation. Once cut, the willows poles were kept hydrated in tanks of water until they could be transported to the planting site. The willows were planted with electric rotary hammer drills (DeWALT® Model DW530) fitted with 1-inch diameter, 3-foot bits (see Figure 3).

With one drill, two people can plant 500 willow poles per day to a 3-foot depth. The new riverbank was built with a small bulldozer on somewhat steep slopes nearly at the angle of



Figure 3: Planting Coyote willow using a hammer drill.



Figure 4: Newly contoured riverbank before planting

considered dead because they did not have any green leaves. Some willows that were considered dead could possibly resprout at the base during this current growing season. Those that were dead were generally found on the upper slope of the bank where they may have been above the capillary soil moisture from the stream (see Figures 7 and 8).

repose (see Figure 4).

Because of the steep incline of the bank, willows were planted at a relatively dense rate on approximately 1-foot centers from the edge of the river to the crest of the bank. To help stabilize the bank, the willows were planted for approximately 200 linear feet (see Figures 5 and 6).

Results

On June 12, 2001, the willows were evaluated for survival rates. The willows have a 91% survival rate with a total of 137 willows



Figure 5: Willows planted to edge of river

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Overall, the willows planted looked very vigorous. Currently, there does not appear to be any surface soil erosion where the willows have been planted.

The Hammer drills worked moderately well in the rocky soil. They were able to generate 3-foot holes most of the time. However, the drill bits did get jammed between the rocks in some holes preventing them from rotating. Consequently, the drill would spin instead of the bit, forcing the operator to release the drill.



Figure 6: Same location showing willows were planted to the crest of the bank.



Figure 7: Willow on the upper bank may have become droughty and died.



Figure 8: A second location where willow died on the upper bank.